

30. (Currently Amended): An electro-optical ~~Electronic~~ component having a plastic housing that includes at least one metallic soldering area, characterized in that the surface of the plastic housing, except for the metallic soldering area, is at least partially covered by an anti-solder coating, wherein said component is apart from any support structure, said anti-solder coating preventing solder adherence to the coating.

31. (Currently Amended): An electro-optical ~~Electronic~~ component having a plastic housing that includes at least one metallic soldering area, characterized in that the surface of the plastic housing, except for the metallic soldering area, is at least partially covered by an anti-solder coating, wherein said coating has an end, and said coating ends at said component, said anti-solder coating preventing solder adherence to the coating.

32. (New): An electro-optical component as in claim 1 or 28 or 29 or 30 or 31, wherein the anti-solder coating can be applied to the plastic housing from a hydrous solution.

33. (New): An electro-optical component as in claim 1 or 28 or 29 or 30 or 31, wherein the electro-optical component is an electro-optical receiving or transmitting device.

REMARKS

The present Reply is being filed together with a Request for Continued Examination (RCE) and a Petition for 1-Month Extension, following the Notice of Appeal filed March 18, 2005, which in turn was responsive to the Advisory Action dated March 16, 2005 and Final Office Action dated September 22, 2004.

Claim Status

Claims 1-7 and 27-33 are pending. Claims 1, 28, 29, 30, and 31 are independent claims. Claims 32 and 33 are new.

Prior Art Rejection

All claims stand rejected as obvious over U.S. Patent 4,030,948 ("Berger") in view of Prior Art shown in Figure 2 of the present application ("PA"). The Office Action dated September 22, 2004 concedes that "Berger does not explicitly disclose the component being a LED component having a plastic body/housing." (Office Action at page 2.) However, it argues that "[it] would have been obvious ... to employ a component being a LED having a plastic body as taught by PA to modify the component of Berger for the purpose of transmitting/receiving signal and reducing weight and low cost for manufacturing." (Office Action at page 3.)

The Advisory Action further stated: "Applicant's arguments are not persuasive because the claims directly recite 'an electronic component', Berger discloses a semiconductor device, which is an electronic component, and the Prior Art [PA] teaches an electronic component or LED component. Therefore, the combination of Berger and PA is moot, and the examiner is maintain [sic] the final rejection mailed on 09/22/04" (Advisory Action at 1.)

For the following reasons, we traverse.

1. Berger does not disclose “an anti-solder coating preventing solder adherence to the coating”

Berger does not disclose “an anti-solder coating preventing solder adherence to the coating,” as recited in each of the independent claims. While the Action points to conformal coating layer 34 for this teaching, it points to no section of Berger indicating that layer 34 prevents solder from adhering to it.

To the contrary, Berger states:

“The material of the layer 34 comprises one of the novel conformal coating materials to be described heretoeafter ... The material [of layer 34] should adhere very tenaciously to the surface to which it is applied ...” (col. 3, lines 52-53.)

“The material of the circuits 154 and 158 may be of copper, aluminum and the like. A layer 160 of a suitable conformal coating material such, for example, as described [in conformal coating layer 34] ... is disposed on at least the [metal] circuit 154. When cured in situ, the material of the layer 160 shows excellent adherence to the board 152 and the material of the circuit 154. *The metal of the layer 158 adheres well to the cured conformal coating material* and is electrically isolated thereby from the metal circuit 154.” (col. 10, lines 37-45, emphasis added, see also Fig. 5.)

Thus, Berger states that the material of conformal layer adheres well to metal, and that metal adheres well to it. Because solder usually includes metal, Berger in fact indicates that the material of conformal coating layer 34 material does the opposite of that claimed – it promotes metal adherence. Accordingly, the rejection must fail because the cite prior art does not disclose, and in fact, teaches away, from the claimed invention. MPEP §§ 2131, 2143.01, 2143.03.

In contrast, the specification explains that “to *prevent* the occurrence of solder splash in the form of small solder accumulations on electronic component surfaces not intended for soldering, particularly during immersion in a solder bath or during solder flood processes, the invention suggests an *anti-solder coating* on the electrical component surfaces not intended for soldering that prevents solder adherence” (page 2 of the specification, emphasis added.)

2. Berger's coating cannot be combined with the plastic housing in PA because Berger's coating are cured at high temperatures

The action concedes that "Berger does not explicitly disclose the component ... having a plastic body/housing," but argues that it would be obvious to apply Berger's conformal coating to the plastic housing in PA for "reducing weight and low cost of manufacturing." (Office Actions pages 2-3.) We disagree.

Berger explains that "[a]fter application of the conformal coating material to the surface area of the body 12, it is cured in situ" (col. 8, lines 51-52.) Berger goes on to describe a three-hour curing cycle in which the temperature is raised to 300°C (col. 8, line 51, through col. 9, line 6.) But a high-temperature curing cycle such as this would seriously degrade the plastic housing material described in PA. Accordingly, the proposed combination renders the prior art unsatisfactory for its intended purpose, and therefore the proposed modification must fail. MPEP § 2143.01.

3. Berger's coating cannot be combined with the plastic housing in PA because Berger's coating is opaque

The action concedes that "Berger does not explicitly disclose the component being a LED component," but argues that it would be obvious to apply Berger's conformal coating to coat the housing of electro-optical component 1 in PA "for the purpose of transmitting/receiving signal." (Office Actions pages 2-3.) We disagree.

Berger admits that his conformal coating is opaque (col. 4, lines 14-15.) While in the same section, Berger suggest that it might be desirable to have a more translucent coating, he fails disclose how to make this possible. Therefore, the only coating enabled by Berger is unsuitable for the alleged motivation of "transmitting/receiving signal," because the coating is opaque to such signals. Accordingly, the proposed motivation, and therefore the rejection, must fail. MPEP § 2143.01.

4. Berger does not disclose a coating “consisting essentially of a siloxane”

Dependent claim 2, which depends from each of the independent claims, recites that “the anti-solder coating consists essentially of a siloxane.” Further dependent claims 3-6 go on to recite with greater specificity the type of siloxane. While the conformal coating in Berger includes some siloxane, it does not “consist essentially of” a siloxane.

To the contrary, Berger states:

“In accordance with the teachings of this invention, there is provided a reaction product of a tetracarboxylic acid dianhydride, a diamine and a di(aminoalkyl) polysiloxane wherein *the polysiloxane diamine constitutes from 18 to 45 mole percent of the total diamines in the copolymer.*” (col. 2, lines 7-12, emphasis added.)

Moreover, because the copolymer includes more than just diamines, the polysiloxane content in the polymer as a whole is even less than the cited 18 to 45 mole percent. Such content falls far short of that required by a claims using the transitional phrase “consisting essentially of.” See MPEP § 2111.03. Accordingly, the rejection must fail because the cited prior art does not disclose the invention claimed in claims 2-6. MPEP §§ 2131, 2143.03.

New Claims

Finally, we note that new claim 32 recites that “the anti-solder coating can be applied to the plastic housing from a hydrous solution.” In contrast, Berger describes using very different solvents. See, e.g., col. 8, lines 30-33.

With respect to such claim, the specification notably explains that “a highly-effective homogenous anti-solder coating is created that advantageously involves no viscous intermediary solution, thanks to its special chemical structure and by the use of hydrous systems. A special advantage to this is that no environmentally damaging solutions are used” (page 2.)

Applicant : Hohn et al.
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Page : 10 of 10

Attorney's Docket No.: 12406-017001 / 1999 P2843 US
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Conclusion

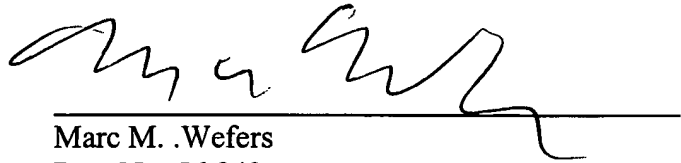
We ask that the application be allowed.

Enclosed is a \$120.00 check for a Petition for 1-Month Extension and a \$700.00 check for excess claim fees. Please apply any other charges or credits to deposit account 06-1050, referencing Attorney Docket No. 12406-017001.

Respectfully submitted,

Date: _____

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